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Formerly: Bryns Patentkontor A/S

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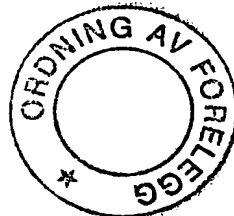
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Attn.: IPEA/SE

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PCT/NO00/00260 of 09.08.2000

Applicant: Engineering & Drilling Machinery AS

Dear Sirs,

This is in reply to the Written Opinion of 10 July 2001.

A new set of claims for consideration when establishing the preliminary examination report is enclosed.

The Examiner concludes in the Written Opinion that the invention is not considered involving an inventive step.

This conclusion is respectfully traversed.

According to the invention the object of the invention is to strengthen gear wheel by giving each tooth the properties of a theoretical beam, this being achieved by a shrink-fitting to strengthening rings around the two side-extremities of the wheel.

DE 3831627 discloses a method and a device for strengthening a gear wheel. According to627 (column 2, l. 7-11) "erhält man ein Zahnrad mit verkürzten Zahnlängen und Zähnen, die bei ihrer Festigkeitsberechnung als einseitig im Radkörper eingespannte und zusätzlich ein- oder beiderseitig abgestützte Platten betrachtet werden können" (our underlining).

This means that each tooth in the known gear wheel is/may be regarded as a cantilever which on both sides are supported by plate elements which are connected to the respective teeth by adhesives, soldering or welding.

The present invention differs in two respects from the known technique.

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The said known supporting rings are not conformed with regard to the shape of the teeth (teeth flanks) in DE 38 31 627, nor are they shrink-fitted.

To the contrary, in DE 38 31 627 the supporting rings are placed in circumferential grooves and are connected to the tooth sides (in the grooves) through adhesives, soldering or welding.

Shrink-fitting is not considered in DE 38 31 627. Note in this connection the use of "ausenliegende, einteilige Abstützringe" and "mehrteilige Innenabstützringe". Obviously twopart rings cannot be shrink-fitted. Shrink-fitting will be of no use in DE 38 31 627, simply because a shrink-fitting would mean a shrink-fitting around the wheel base and not around the teeth, as in the present invention.

The only common feature is the use of strengthening rings. The object in DE 38 31 627 is to shorten the teeth in the axial direction and to establish teeth configurations which may be recorded as cantilevers with side supporting plates. The object of the present invention is not to shorten the teeth but to establish them as theoretical beams, between the shrink-fitted rings.

The Examiner's conclusion regarding the content of claim 3 and 5 is also respectfully traversed. The shrink-fitting of the rings is new and it cannot be seen that it should be obvious for a person skilled in the art to use the process as disclosed in method claim 3. Envisaging the toothed rim of the driving gear stretched out to a correspondingly large circle, shrinkfits being chosen for this circle in accordance with the ISO tables of limits and fits, and making similar considerations for the ring, is not known and cannot be considered obvious, especially not in view of DE 38 31 627 where one finds strengthening rings which are not shrink-fitted around the gear wheel.

Yours faithfully
BRYNS ZACCO AS

Gunnar O. Reistad

Encl.: Amended claims